

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

GOTTE=1

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/019556

INTERNATIONAL APPLICATION NO.
PCT/EP00/06095

INTERNATIONAL FILING DATE
30 June 2000

PRIORITY CLAIMED
30 June 1999

TITLE OF INVENTION

EXTRUDER FOR THERMOPLASTIC MEDIA

APPLICANT(S) FOR DO/EO/US

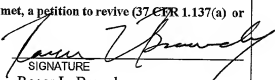
Johannes GOTTE

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ The US has been elected in a Demand by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not transmitted by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 12. ☐ An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A FIRST preliminary amendment.
 - ☐ A SECOND or SUBSEQUENT preliminary amendment.
 14. ☐ A substitute specification.
 15. ☐ A change of power of attorney and/or address letter.
 16. ☒ Other items or information:
 - ☒ Courtesy copy of the International Application as filed (In German).
 - ☒ Courtesy copy of the first page of the International Publication (WO 01/02156).
 - ☒ Formal drawings, 2 sheets, Figures 1-3.
 - ☒ Courtesy Copy of the International Search Report.
 - ☒ Application Data Sheet
- ☒ The application is (or will be) assigned to: G&G NATURPACK GMBH, whose address is Im Tirol 6, D-34434 Borgentreich, Germany.

U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/01955		International Application No. PCT/EP00/06095		Attorney's Docket No. GOTTE=1	
17. [xx] The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a)(1)-(5): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO..... \$1040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO..... \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO..... \$740.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4)..... \$710.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)..... \$100.00				CALCULATIONS PTO USE ONLY	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [X] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
Claims as Originally Presented	Number Filed	Number Extra	Rate		
Total Claims	- 20		X \$18.00	\$	
Independent Claims	- 3		X \$84.00	\$	
Multiple Dependent Claims (if applicable)			+\$280.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$1,020.00	
Claims After Post Filing Prel. Amend	Number Filed	Number Extra	Rate		
Total Claims	- 20		X \$18.00	\$	
Independent Claims	- 3		X \$84.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$1,020.00	
Reduction of 1/4 for filing by small entity, if applicable Applicant claims small entity status. See 37 CFR 1.27.				\$ 510.00	
SUBTOTAL =				\$ 510.00	
Processing fee of \$130.00 for furnishing the English translation later than [] 20 [X] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 640.00	
TOTAL NATIONAL FEE =				\$ 640.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$	
TOTAL FEES ENCLOSED =				\$ 640.00	
				Amount to be:	\$
				refunded	
				charged	\$
a. [] A check in the amount of \$ _____ to cover the above fees is enclosed. b. [X] Credit Card Payment Form (PTO-2038), authorizing payment in the amount of \$ 640.00, is attached. c. [] Please charge my Deposit Account No. 02-4035 in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. d. [XX] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-4035 A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, N.W., SUITE 300 WASHINGTON, D.C. 20001 TEL: (202) 628-5197 FAX: (202) 737-3528 Date of this submission: December 31, 2001					
				 SIGNATURE Roger L. Browdy NAME 25.618 REGISTRATION NUMBER	

INVENTOR INFORMATION

10/019556

Inventor One Given Name:: Johannes
Family Name:: GOTTE
Postal Address Line One:: Im Tirol 6
City:: Borgentreich
Country:: Germany
Postal or Zip Code:: D-34434
Citizenship Country:: Germany

531 Rec'd PCT

31 DEC 2001

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 001444
Fax One:: 202-737-3528
Electronic Mail One:: Mail@BrowdyNeimark.com

APPLICATION INFORMATION

Title Line One:: EXTRUDER FOR THERMOPLASTIC MEDIA
Total Drawing Sheets:: 2
Formal Drawings?: Yes
Docket Number:: GOTTE=1
Secrecy Order in Parent Appl.?: No

REPRESENTATIVE INFORMATION

Representative Customer Number:: 1444

CONTINUITY INFORMATION

This application is a:: 371 OF
> Application One:: PCT/EP00/06095
Filing Date:: 06-30-2000

PRIOR FOREIGN APPLICATIONS

Foreign Application One:: 199 29 824.6
Filing Date:: 06-30-1999
Country:: Germany
Priority Claimed:: Yes

Source:: PrintEFS Version 1.0.1

10019556 "051302

10/019556

531 Rec'd PCT

31 DEC 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	Art Unit:
Johannes GÖTTE)	
)	
IA No.: PCT/EP00/06095)	
)	Washington, D.C.
IA Filed: June 30, 2000)	
)	
U.S. App. No.:)	
(Not Yet Assigned))	
)	December 31, 2001
National Filing Date:)	
(Not Yet Received))	
)	
For: EXTRUDER FOR...)	Docket No.: GOTTE=1

PRELIMINARY AMENDMENT

Honorable Commissioner for Patents and Trademarks
Washington, D.C. 20231

Sir:

Contemporaneous with the filing of this case and
prior to calculation of the filing fee, kindly amend as
follows:

IN THE SPECIFICATION

After the title please insert the following
paragraph:

--REFERENCE TO RELATED APPLICATIONS

The present application is the national stage under
35 U.S.C. 371 of international application PCT/EP00/06095,
filed June 30, 2000 which designated the United States, and
which international application was not published under PCT
Article 21(2) in the English language.--

10019556.051302

In re of: Johannes GÖTTE (GOTTE=1)

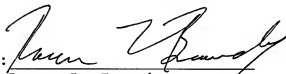
REMARKS

The above amendment to the specification is being made to insert reference to the PCT application of which the present case is a U.S. national stage.

Favorable consideration is earnestly solicited.

Respectfully submitted,
BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant

By:


Roger L. Browdy
Registration No. 25,618

RLB:wrd

Telephone No.: (202) 628-5197

Facsimile No.: (202) 737-3528

F:\,H\HANE\Gottel\PTO\Preliminary Amendment.doc

10019556-051302

April 05, 2001

My Docket: G 59/12

Application No. PCT/EP00/06095
Applicant: G & G NATURPACK GmbH

In response to the Office Action of March 19, 2001

10/019556
Rec'd PCT/PTO 13 MAY 2002
EP 000006095

Extruder for Thermoplastic Media

The invention is concerned with an extruder for plasticizing thermoplastic media that is provided at its one end with a granule inlet in an inlet zone and at its opposite end with an outlet bore, also with a motor-driven threaded spindle that is disposed within a jacket with an opposite jacket thread, wherein the length-specific free total cross section of the spindle thread and the jacket thread is approximately constant along a plasticizing zone of the spindle length, and the free spindle thread cross section as well as the free jacket thread cross section change linearly in said zone in a complementary manner.

An extruder of this type is known from DE 44 00 330 A1. It is designed for plasticizing and foaming amylaceous bran or farine starting substances. The opposite threads in the jacket and in the spindle cause a pronounced shearing stress on the loaded granular substances, which are compacted under significant pressure of the spindle rotation and become very warm due to the stress.

The energy efficiency is nearly 90%. The spindle and the jacket widen towards the outlet and make increasingly more room available for the plastified and liquefied material to foam with the aid of the moisture contained in the material, which starts to evaporate.

Extruders of the type mentioned at the beginning are known from U.S. Application No. 3 164 375. They carry on both sides of the spindle and also the jacket trapezoidal threads or threads

AMENDED PAGE

with round recesses. While these trapezoidal threads provide a good support at the back of the recesses, they impede the desired forward flow of the medium at the front of the recesses.

The behavior is the opposite with the round threads, i.e., the advance is weak. Furthermore, the medium constantly flows back and forth between the passing threads, which is intended to provide for a thorough blending but is an obstacle to a systematic shearing stress on the entire mass that is being lead through.

Furthermore, the thread indentations on the spindle decrease in depth from the inlet toward the outlet, and in the jacket thread they increase accordingly. This results in an unfavorable pressure distribution in the axial direction.

An extruder is furthermore known from EP-A 0 574 172, which is provided with opposite trapezoidal threads that vary in their depth multiple times in the spindle and in the jacket in a complementary manner. At the inlet and outlet the thread of the spindle is fully developed and no thread exists within the jacket.

It is the object of the invention that the thread recess of at least one of the threads has a steep flank at its given inlet side and a flat flank at its given outlet side.

The solution is presented in the characteristic of the main claim.

Advantageous embodiments are presented in the subclaims.

The usability of the above described extruder that has so far been used for amylaceous products to plasticize thermoplastic plastics has been discovered by surprise.

The known extruder is significantly shorter than the customary single-shaft or two-shaft extruders that are used for plastics. Furthermore, its efficiency is significantly higher and, owing to the better blending during the conveyance against the opposite thread, no local overheating of the material occurs; the temperature increase above the plasticizing temperature is only approximately 10°C.

The opposite threads of the spindle and the jacket cause a material flow between them, from the decreasing towards the increasing cross section. The material flow is facilitated if the flank of the thread land is flattened on the outlet side to facilitate a forward movement of the mass and specifically enhance a wedge effect during the transition into the other thread.

Both threads are preferably designed with different numbers of starts, e.g., two to three or two to four.

In an advantageous embodiment, the free total thread cross section per spindle length section is constant, however, the distribution of the cross section portions between the opposite threads along the length of the spindle is different due to depth variations. It increases from 10% to 90% and decreases from 90% to 10% on the other side. In this manner a portion of the mass that is contained in the flattening thread turn, and that was just subjected to shear stress, is taken over bit by bit into the deepening thread.

Figs. 1 through 3 show sections of different embodiments of the thread pairs.

Fig. 1 shows an axial section through a first embodiment of an extruder;

Fig. 2 shows a section of a thread of a second type;

Fig. 3 shows a section of a thread of a third type.

Fig. 1 shows an extruder with a motor-driven spindle S that is held centered within a jacket M with a loose mounting.

On the inlet side, a material inlet E is built into the jacket M, and at the end an outlet bore A is provided inside a cover plate, to which an injection or molding system can be attached.

The spindle S and the jacket M are cylindrical in their thread roots and conical in their upper thread lands. As a result the free thread cross sections QS, QM of the spindle thread SG and the jacket thread SM are essentially constant along the length of the spindle S; however, the free cross section SQ of one thread SG steadily increases in the direction of conveyance F and the free thread cross section QM of the other thread MG steadily decreases.

In the example of Fig. 1, the two threads MG, SG are shown as trapezoidal threads. It has been shown, however, that it is advantageous to provide at least one of the threads with a flat flank FF.

One embodiment of this type is shown in Fig. 2, where the one thread GS is a trapezoidal thread and the other is a concave half round thread. This facilitates a circulation of the material while it is being advanced.

10019556-051302

Fig. 3 shows a further variant of the threads SG, MG, wherein the given flanks FS of the thread starts that are located backwards from the direction of conveyance F, i.e., which serve for the advance or rearward support of the material, are kept relatively steep, and the front flanks FF of the starts are kept relatively flat to enhance the continued flow and effect a pronounced squeezing between the steep flank FS of the one thread and the flat flank FF of the given opposite thread during the continuous rotation of the spindle S.

The dimensions that have proven suitable are 80 mm (60 - 100 mm) spindle diameter D, 250 mm (150 - 320 mm) spindle length, and a free total cross section QS + QM of opposite thread turns of approximately 100 mm² (50 - 150 mm²).

Especially polyethylene, which is sensitive to excessive temperatures, can be liquefied with a short extruder of this type. A jacket heater is not necessary. It has proven advantageous, however, to have the outlet face end thermostatically heated.

Claims

- 1019556-051302
1. An extruder for plasticizing thermoplastic media, provided at one end with a granule inlet (E) in an inlet zone and at its opposite end with an outlet bore (A), having a motor-driven threaded spindle (S) that is located within a jacket (M) with an opposite jacket thread (MG), wherein, across a plasticizing zone of the spindle length, the length-specific free total cross section ($GS + QM$) of the spindle thread (SG) and of the jacket thread (MG) is approximately constant, and the free spindle thread cross section (QS), as well as the free jacket thread cross section (QM) change linearly in said zone in a complementary manner, characterized in that the thread recess of at least one of the threads (MG, SG) has a steep flank (SF) at its given inlet side and a flat flank (FF) at its outlet side.
 2. An extruder according to claim 1, characterized in that one of the two threads (MG, SG) is a trapezoidal thread and the other thread has at its outlet side a flat shaped thread flank (FF) .
 3. An extruder according to claim 1 or 2, characterized in that the free spindle cross section (QS) varies at its inlet side between 10% - 20% and at its outlet side between 80% - 90% of the free total cross section ($QS + QM$).
 4. An extruder according to any of the above claims, characterized in that both threads (MG, SG) are multi-start threads with a different number of starts.
 5. An extruder according to claim 4, characterized in that one of the threads (SG) is a two-start thread and the other a three-start or four-start thread.

6. An extruder according to any of the above claims, characterized in that the diameter (D) to the length ratio of the threaded spindle (S) approximately 1 to 2 to 1 to (4).* An extruder according to any of the above claims, characterized in that the spindle diameter (D) is approximately 80 mm.
7. An extruder according to any of the above claims, characterized in that the free total cross section (QS + QM) of the threads (S, M) is 50 to 150 mm².
8. An extruder according to any of the above claims, characterized in that it is connected at its outlet to a plastic injection or molding system.

* Translator's note: This translation is based on an incomplete sentence in the German-language document.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



(43) Internationales Veröffentlichungsdatum
11. Januar 2001 (11.01.2001)

PCT

(10) Internationale Veröffentlichungsnummer
WO 01/02156 A1

(51) Internationale Patentklassifikation⁷: B29C 47/38
// B29B 7/42

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): GÖTTE, Johannes
[DE/DE]; Im Tirol 6, D-34434 Borgentreich (DE).

(21) Internationales Aktenzeichen: PCT/EP00/06095

(74) Anwalt: BOEHMERT & BOEHMERT;
HANEWINKELE, Lorenz, Ferrariweg 17 a, D-33102
Paderborn (DE).

(22) Internationales Anmeldedatum:
30. Juni 2000 (30.06.2000)

(25) Einreichungssprache: Deutsch

(81) Bestimmungsstaaten (national): AE, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE,
DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID,
IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ,
UA, UG, US, UZ, VN, YU, ZA, ZW.

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
199 29 824.6 30. Juni 1999 (30.06.1999) DE

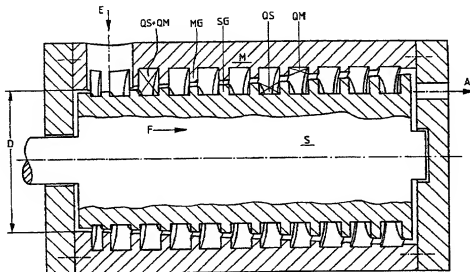
(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von
US): G & G NATURPACK GMBH [DE/DE]; Im Tirol 6,
D-34434 Borgentreich (DE).

(84) Bestimmungsstaaten (regional): ARIPO-Patent (GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), eura-
sisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Fortsetzung auf der nächsten Seite]

(54) Title: EXTRUDER FOR THERMOPLASTIC MEDIA

(54) Bezeichnung: EXTRUDER FÜR THERMOPLASTISCHE MEDIEN



(57) Abstract: The invention relates to an extruder for plastifying thermoplastic media. Said extruder is provided at its one end with a granule inlet (E) in an inlet zone and at its opposite end with an outlet bore (A). The extruder further comprises a motor-driven threaded spindle (S) that is located within a jacket (M) with an opposite jacket thread (MG). Across a melting zone of the spindle length the length-specific free total cross-section (GS + QM) of the spindle thread (SG) and of the jacket thread (MG) is approximately constant and the free spindle thread cross-section (QS) and the free jacket thread cross-section (QM) change linearly in said zone in a complementary manner.

[Fortsetzung auf der nächsten Seite]

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Page 1 of 2 Pages [x] Original [] Substitute [] Supplemental

Atty. Docket: GOTTE1

Combined Declaration for Patent Application and Power of Attorney

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

EXTRUDER FOR THERMOPLASTIC MEDIA

the specification of which (check one)

[] is attached hereto;
[] was filed in the United States under 35 U.S.C. §111 on _____, as
U.S. Appia. No. _____; or

[X] was/will be filed in the U.S. under 35 U.S.C. §371 by entry into the U.S. national stage of an international
(PCT) application, PCT/ EP00/06095; filed 30 June 2000, entry requested
on 31 December 2001; national stage application received U.S. Appia. No.
_____; §371/§102(c) date _____ (* if known)

and was amended on 31 December 2001 (if applicable).

(include dates of amendments under PCT Art. 19 and 34 if PCT)

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and I acknowledge the duty to disclose to the Patent and Trademark Office (PTO) all information known by me to be material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §§ 119 (a)-(d) and 365 (b) of any prior foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or under §365(a) of any PCT application which designated at least one country other than the U.S., listed below:

Application No.	Country	Filing Date (MM/DD/YYYY)
199 29 824-6	Germany	06/30/1999

If I claimed foreign priority above, I hereby identify below any foreign application for patent (including an international (PCT) application designating a country other than the United States) or for an inventor's or plant breeder's certificate, having a filing date before that of the earliest application from which foreign priority is claimed (if left blank, then there are none):

Non-Priority Application No.	Country	Filing Date (MM/DD/YYYY)

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional applications listed below:

Application No.	Filing Date (MM/DD/YYYY)

I hereby claim the benefit under 35 U.S.C. §120 of any prior U.S. non-provisional application(s) or under §365(c) of any prior PCT international application(s) designating the U.S., listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in such U.S. or PCT international application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the PTO all information which is material to patentability as defined in 37 C.F.R. §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Filing Date (MM/DD/YYYY)	Status (patented, pending, abandoned)

As a named inventor, I hereby appoint the following registered practitioners to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

All of the practitioners associated with Customer Number 001444

Direct all correspondence to the address associated with Customer Number 001444, which is presently:

BROWDY AND NEWMARK, P.L.L.C.
624 Ninth Street, N.W.
Washington, D.C. 20001-5303
(202) 628-5197

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Page 2 of 2 Pages

Atty. Docket: GOTTE=1

Title: **EXTRUDER FOR THERMOPLASTIC MEDIA**U.S. Application filed _____ Serial No. _____
PCT Application filed _____ Serial No. _____

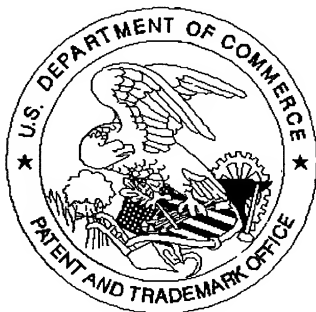
I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

FULL NAME OF FIRST INVENTOR Johannes GOTTE		INVENTOR'S SIGNATURE <i>Joh. Gotte</i>		DATE 03/05/2002
RESIDENT Borgentreich, Germany			CITIZENSHIP Germany	
POST OFFICE ADDRESS Im Türl 6, D-34434 Borgentreich, Germany				
FULL NAME OF SECOND JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				
FULL NAME OF THIRD JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				
FULL NAME OF FOURTH JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				
FULL NAME OF FIFTH JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				
FULL NAME OF SIXTH JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				
FULL NAME OF SEVENTH JOINT INVENTOR		INVENTOR'S SIGNATURE		DATE
RESIDENT			CITIZENSHIP	
POST OFFICE ADDRESS				

ALL INVENTORS MUST REVIEW APPLICATION AND DECLARATION BEFORE SIGNING. ALL ALTERATIONS MUST BE INITIALED AND DATED BY ALL INVENTORS PRIOR TO EXECUTION. NO ALTERATIONS CAN BE MADE AFTER THE DECLARATION IS SIGNED. ALL PAGES OF DECLARATION MUST BE SIGNED BY ALL INVENTORS.

10019556 051302

United States Patent & Trademark Office
Office of Initial Patent Examination -- Scanning Division



SCANNED, # 10

Application deficiencies found during scanning:

☐ Page(s) _____ of Drawings were not present
for scanning. (Document title)

☐ Page(s) _____ of _____ were not present
for scanning. (Document title)

☐ *Scanned copy is best available.*